

Mid Mokau-Piopio – Quarterly River Monitoring August

Sample Collection Day: 25th August 2025

Water quality was **Fair** in all sites – Mokau River-above Wairere Dam (Site 7), Mokau River-HWY 4 (Site 13), Mangapehi river-HWY 4 (Site 14) and Mapara stream (Site 15).

E. coli concentrations were low across all sites (≤ 200 cells per 100 mL). All sites fell within recommended health guidelines for swimming (540 cells per 100 mL), and Mokau river-above Wairere Dam also met guidelines for livestock drinking water (< 100 cells per 100 mL).

Nitrogen: Nitrate concentrations were slightly elevated across all sites (0.54 - 0.78 mg/L) but were well below ecological toxicity levels (2.4 mg/L). **Ammonia** concentrations were low across all sites (≤ 0.01 mg/L). **Dissolved inorganic nitrogen (DIN)** was slightly elevated across all sites (0.55 – 0.79 mg/L), exceeding the ecological impact threshold (0.5 mg/L).

Phosphorus: Dissolved reactive phosphorus (DRP) concentrations were very low across all sites (≤ 0.006 mg/L).

Suspended sediment/Water Clarity: Water clarity was *Poor* across all sites (0.79 – 1.19 m), relative to the national bottom line (1.34 m).

The results in the table below have been graded according to the National Policy Statement for Freshwater Management (NPS-FM, 2020).

Mid Mokau-Piopio	Human Contact	Ecosystem Health					
		Water Quality				Sediment	
		Nitrates Toxicity (mg N/L)	Ammonia Toxicity (mg N/L)	Dissolved Inorganic Nitrogen (mg N/L) ²	Dissolved Reactive Phosphorus (mg/L)	Water Clarity (m) ¹	National Bottom Line
Sample Date: 25-Aug-25 Lab: Analytica	E. coli/100 ml						
7-Mokau R, above Wairere Dam	76	0.78	0.010	0.79	0.006	0.98	1.34
13-Mokau R. HWY 4	110	0.54	0.010	0.55	0.005	1.19	1.34
14-Mangapehi R. HWY 4	120	0.71	0.010	0.72	0.006	0.79	1.34
15-Mapara Stm	200	0.54	0.007	0.55	0.005	0.83	1.34

Attribute Band	
A	Ecosystem Health
B	
C	
D	
E	Human Contact only

¹Water clarity has been converted from measured turbidity using the formula $\ln(\text{CLAR}) = 1.21 - 0.72 \ln(\text{TURB})$ (Franklin, Booker & Stoffels, 2020).

²Guideline values to assess ecological impacts of nitrogen on freshwater life. Attribute band limits are from the NPS-FM consultation draft (2019)

Mokau River – Summary of water quality collected from 15 sites across the Mokau River catchment on 25th August 2025

Water quality was Fair across the Mokau River Catchment. While most sites had low to moderate levels of *E. coli* and phosphorus, 80% of all sites had poor water clarity and exceeded the ecological threshold for dissolved inorganic nitrogen.

***E. coli* (Microbial Contamination):**

- ◆ Most sites (73%) had low concentrations (≤ 240 cells per 100 mL), a low risk for swimming.
- ◆ Three sites (20%) had very low concentrations (< 100), considered safe for livestock drinking water¹.
- ◆ Four sites (27%) had slightly elevated concentrations (280 - 460 cells per 100 mL).

Nitrogen

Nitrate:

- ◆ Three sites (20%) had low concentrations (≤ 0.5 mg/L).
- ◆ Twelve sites (80%) exceeded ecological impact thresholds (0.5 mg/L), which can affect stream health.
- ◆ All sites fell well below ecological toxicity thresholds (2.4 mg/L) for native fish and invertebrates.

Ammonia:

- ◆ Most sites had low concentrations ($< 0.005 - 0.03$ mg/L), of little concern for aquatic life.
- ◆ One site (Huioteko stream) had slightly elevated concentrations (0.15 mg/L), which can impact sensitive aquatic species.

Dissolved Inorganic Nitrogen (DIN):

- ◆ Three sites (20%) had low concentrations (≤ 0.50 mg/L).
- ◆ 10 sites (67%) were slightly elevated (0.51 – 1.0 mg/L), exceeding the ecological impact threshold of (0.5 mg/L).
- ◆ Two sites (13%) had concentrations exceeding 1 mg/L, which is of particular concern for aquatic life.

Phosphorus

Dissolved Reactive Phosphorus (DRP):

- ◆ Most sites (93%) had low levels ($< 0.002 - 0.009$ mg/L).
- ◆ One site (Waitanguru) was slightly elevated (0.012 mg/L), which can contribute to problematic plant and algae growth if levels stay high.

Suspended Sediment / Water Clarity:

- ◆ Three sites (20%) had *Excellent* water clarity (A band).
- ◆ One site (Waitanguru stream) had *Fair* water clarity (C band).
- ◆ Nearly three quarters of all sites (73%) had *Poor* water clarity (D band).

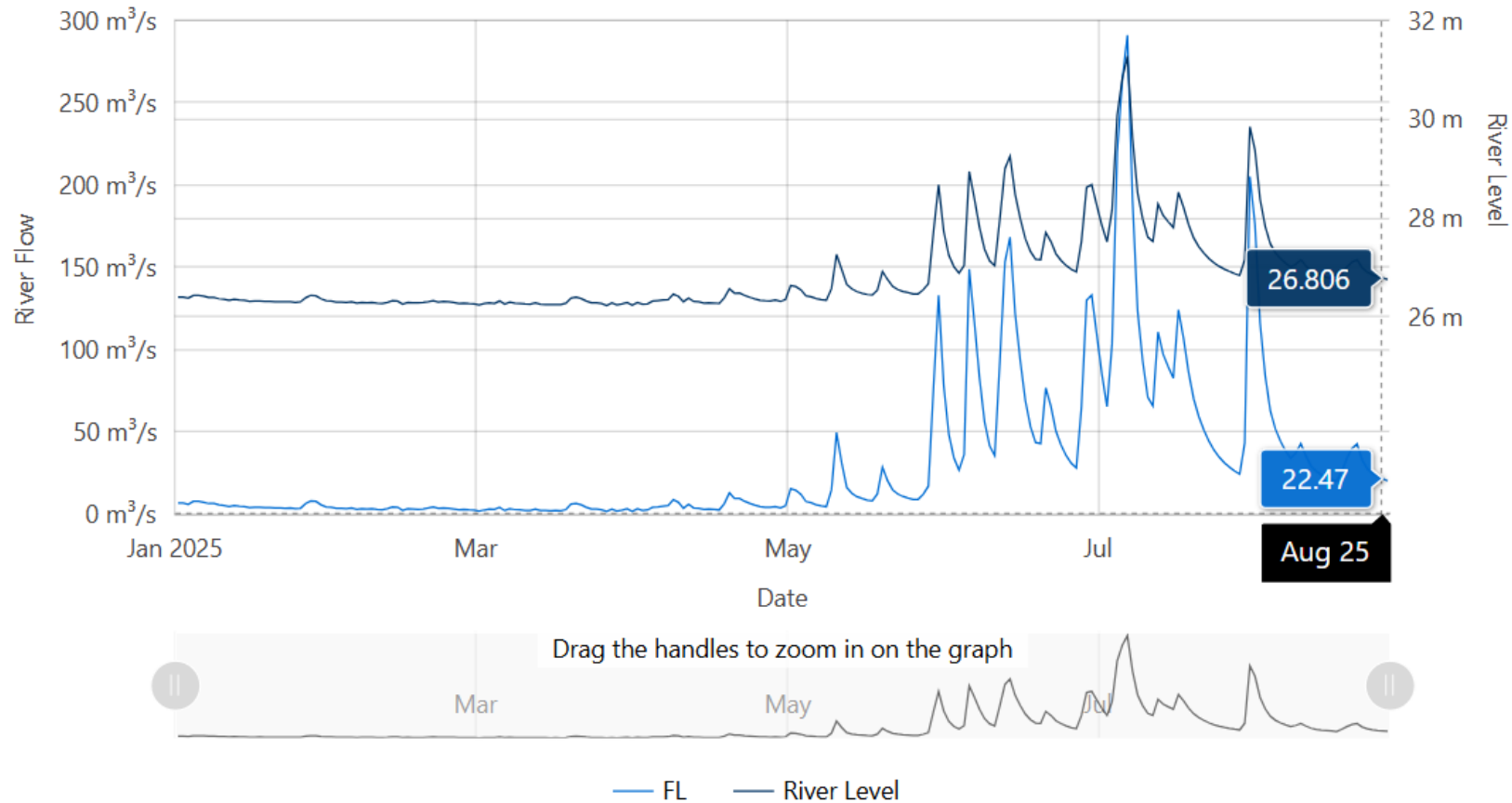
Water clarity bands for each site are based on the National Bottom Line (NBL), which varies depending on local landscape characteristics (e.g. geology, climate, and elevation). For Mokau River sites, the NBL is either 1.34 m or 0.61 m, depending on location.

¹ Drinking water for livestock should contain < 100 cfu/100 mL (median value) of *E. coli*. Livestock Drinking Water Guidelines (2023), Australian & New Zealand Guidelines for Fresh & Marine Water Quality.

River Level and Flow Rate – Mokau River, Totoro Road

The below chart presents continuous data collected by the Waikato Regional Council for Mokau River between 1st January and 26th August 2025.

River Level and Flow Rate on the day of sampling (25-August) are highlighted.



Data source: Waikato Regional Council [envirohub website](https://www.waikato.govt.nz/environ) for environmental data.